

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC
Petitioner

v.

LS CLOUD STORAGE TECHNOLOGIES LLC
Patent Owner

U.S. Patent No. 10,154,092
IPR2023-00120

EX. 1004

DECLARATION OF DR. PAUL FRANZON, PH.D.

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. QUALIFICATIONS	2
III. MATERIALS CONSIDERED	5
IV. APPLICABLE LEGAL STANDARDS.....	7
A. Claim Construction	7
B. Anticipation (35 U.S.C. § 102).....	8
C. Obviousness (35 U.S.C. § 103).....	8
V. LEVEL OF ORDINARY SKILL IN THE ART	12
VI. THE STATE OF THE ART AT THE TIME OF INVENTION.....	13
VII. THE '092 PATENT	20
A. Claim Construction	22
VIII. UNPATENTABILITY ANALYSIS	25
A. Overview of the Prior Art.....	25
1. Heil.....	25
2. Nakayama	26
3. Gulick	27
4. Berman	28
B. Grounds 1 and 2: Anticipation of Claims 1-3, 7-12, and 19-23 by Heil.....	28

1.	Claim 1	29
a)	1.pre: “An apparatus comprising”	29
b)	1.a: “a first interface configured to receive input/output (I/O) traffic from a first host device via a dedicated I/O channel, the I/O traffic comprising a read command”	29
c)	1.b: “a second interface configured to receive first data via a network”	32
d)	1.c: “a cache memory configured to store second data”.....	34
e)	1.d: “a storage device configured to store third data”.....	35
f)	1.e: “a processor coupled to the cache memory, the processor coupled to the storage device via a communication path that is distinct from the dedicated I/O channel, the processor configured to access the cache memory during processing of the I/O traffic”.....	36
g)	1.f: “the processor further configured to perform an access operation at the storage device based on the I/O traffic”	40
2.	Claim 2	41
3.	Claim 3	42
4.	Claim 7	44
5.	Claim 8	46
6.	Claim 9	48

a)	9.a: “the storage device and the dedicated I/O channel are independently accessible”	48
b)	9.b: “wherein the processor is configured to read at least a portion of the second data from the cache memory based on the read command”	50
7.	Claim 10	50
8.	Claim 11	52
a)	11.a: “configuration manager circuitry configured to route an I/O request included in the I/O traffic to the cache memory, to route the I/O request to the storage device, or to deny the I/O request”	52
b)	11.b: “front-end circuitry configured to process the I/O request”.....	54
c)	11.c: “back-end circuitry configured to perform a read operation or a write operation at the storage device based on the I/O request”	55
9.	Claim 12	56
10.	Claim 19	57
a)	19.pre: “An apparatus comprising”	57
b)	19.a: “a first interface configured to receive input/output (I/O) traffic from a host computer via a dedicated I/O channel, the I/O traffic comprising one or more read commands, one or more write commands, or a combination thereof”	57
c)	19.b: “a second interface configured to receive data via a network”	57

d)	19.c: “a cache memory”	58
e)	19.d: “a storage device”.....	58
f)	19.e and 19.f: “a processor coupled via a communication path to the storage device, the processor configured to access the cache memory during processing of the I/O traffic, the processor further configured to perform one or more access operations at the storage device based on the I/O traffic, wherein the communication path is distinct from the dedicated”	58
11.	Claim 20	58
12.	Claim 21	59
13.	Claim 22	59
14.	Claim 23	59
C.	Ground 3: Obviousness of Claims 1-3 and 6-24 Over Heil and Nakayama.....	59
1.	Motivation to Combine.....	60
2.	Claim 1	62
a)	1.pre: “An apparatus comprising”	63
b)	1.a: “a first interface configured to receive input/output (I/O) traffic from a first host device via a dedicated I/O channel, the I/O traffic comprising a read command”	63
c)	1.f: “the processor further configured to perform an access operation at the storage device based on the I/O traffic”	66

Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.